NavMed 369

UNITED STATES NAVY

MEDICAL NEWS LETTER

Vol. 35 Friday, 17 June 1960 No. 12

TABLE OF CONTENTS

MEDICAL NEWS LETTER

Rear Admiral Bartholomew W. Hogan MC USN
Surgeon General

Captain D. R. Childs MC USN, Editor

Contributing Editors

Aviation Medicine	Captain P. J. Pollard MC USN
Dental Section	Captain W. R. Stanmeyer DC USN
Occupational Medicine & Preventive Medicine	Captain L. B. Shone MC USN
Reserve Section	Captain D. J. O'Brien MC USN
Submarine Medicine	Captain G. J. Duffner MC USN

Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

* * * * * *

Change of Address

Please forward changes of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

* * * * * *

Use of funds for printing this publication has been approved by the Director of the Bureau of the Budget (19 June 1958).

* * * * * *

Antigen-Antibody Reactions in Obstetrics

The importance of immunologic events in obstetrics has been well recognized. Unfortunately, the terminology as well as the serologic techniques used by the immunohematologist have become so complex that very real advances in this field are not generally appreciated or generally used.

Terminology

Terminology used in immunohematology particularly casts an aura of confusion. Three groups of substances are commonly discussed and these must be carefully distinguished.

Blood-Group Substance

As the result of the many immunologic studies done on the human erythrocyte, it has been possible to demonstrate various substances which are specific and apparently a part of the erythrocyte membrane. Exactly when they develop in the maturation of the cell is unknown, but they are apparently present in the metarubricyte. It is known that these substances are not a unique feature of the erythrocyte and that they may be secreted in various body fluids—saliva, gastric juice, ovarian cyst fluid, spermatic fluid, et cetera.

Unfortunately, little is known about the detailed makeup of these substances. Only the A and B substances have been extensively studied; these have been isolated only in an impure form. The importance of these substances stems from the fact that they are permanent characteristics of the individual, genetically inherited. As such, they have profound genetic, legal, pathologic, anthropologic, and immunologic implications.

All blood-group substances are antigenic, but the degree to which they stimulate antibody production varies greatly. In general, the strongly antigenic substances are: D(Rho), K, c(hr'), and E (rh''), and they are frequently of pathologic significance.

Blood Group

With detailed family studies of the inheritance of the various blood-group substances, certain patterns have emerged—various substances are inherited in definite relationship to each other. These substances are grouped together and the unit is termed a blood group. At this time, 12 such public groups are known in the general population. In addition, at least 11 other groups have been found limited to families and are termed private blood groups.

Antibodies Aganist Blood-Group Substances

Insofar as these agents are responsible for the clinical picture of hemolytic disease of the newborn—as well as transfusion reactions and incompatible crossmatches—they are of major interest to the obstetrician. Only an incomplete understanding is available of erythrocyte antibody production in the human being. A major unknown factor is the abillty of an individual to produce antibodies. This is highly variable. Even using a potent antigen, such as the D or (Rho) factor, only approximately 90% of D(-) individuals will produce anti-D.

Modification by Diseases. Diseases themselves can modify the ability to produce antibodies. The agamma-globulinemic individual is poorly, if at all, sensitized. On the other hand, individuals with systemic lupus erythematosus or acquired hemolytic anemia tend to produce antibodies easily. The amount of antigen necessary to lead to antibody production also is unknown.

Variable Factors. Another variable is the ability of the blood-group substances to induce antibody formation—not all are equally antigenic. The antigenicity, as well as the distribution of the blood-group substance, determines the importance in leading to hemolytic disease of the newborn. Anti-D, anti-K, anti-c, and anti-E are of major importance and account for almost 99% of all cases of hemolytic disease of the newborn. The frequency of introducing the foreign antigen is also of great significance in production of antibodies. The spacing of the sensitizing doses is equally crucial and the route of introducing the sensitizing agent appears important. Thus, using two or more routes seems more likely than a single route in inducing antibody formation.

Indiscriminate Blood Transfusions. Giving of indiscriminate blood transfusions in the young or in women of childbearing age can only be condemned. This is particularly important in view of the fact that usually neither the patient nor the blood donor are typed for the E, c, or K factors. A major advance will be introduction of simple and rapid typing procedures for the c and K blood-group substances.

Blood-group antibodies may perisist in the circulation for many years. More important, sensitization apparently persists for life and reimmunization by a second pregnancy can lead to an amnestic type of response with high antibody titers obtained.

Serologic Characteristics. The starting point of any study of incompatible blood, either as seen in hemolytic disease of the newborn or with a transfusion reaction, is demonstration of an antibody and subsequent identification of the antibody.

Test Procedures. The intelligent diagnosis and treatment of antibody-antigen reactions applied to the blood-group substances is based on efficient laboratory studies. Unfortunately, the average clinician is lost in the maze of available test procedures and unable to gauge either diagnosis or therapy.

Laboratory Approach

The Coombs' Test

Certain antibodies are "incomplete" and coat incompatible erythrocytes, rather than lead to visible agglutination. An additional procedure is necessary to demonstrate the coating effect and thereby the incompatibility. The Coombs' test is most frequently used in this respect.

The Coombs' test may be used in two different procedures—a direct and indirect test. The direct test is used to determine if an antibody is coating the patient's erythrocytes; the indirect test is used to determine if an antibody is circulating in the patient's serum.

Remedial Techniques

Specific suggestions are presented in an attempt to correct multiple problems in precise determination of blood groups and blood-group substances. Many techniques can be easily applied to the routine hospital facility. As such, close cooperation among the pathologist, obstetrician, pediatrician, and the immunohematologist is necessary to establish the simplest and most accurate techniques with the widest range of activity.

Testing During Pregnancy. By the fifth month of pregnancy, patients with a history of previous pregnancy, spontaneous abortion, or transfusions should be tested for the presence of an antibody. This group includes Rh positive as well as Rh negative individuals. The Rh positive group is emphasized because the prenatal diagnosis of an antibody will enable the laboratory to identify the substance and arrange for presence of compatible blood for exchange or transfusion to the mother.

Prenatal Testing. The prenatal testing should consist of the usual antibody titer determination—an indirect Coombs' test, bromelin test, or both. However, the test must be modified so that the target erythrocytes contain the blood-group substances against which the most frequently seen antibodies are directed—D, c, E, K, Fy^a, e, et cetera. A negative result should be reported as negative for antibodies acting against whatever blood-group substances are in the pool used.

Reference Panel of Cells. A reference panel of cells should be available at all times. By use of such a panel, it will be possible to identify any antibody found and thereby intelligently arrange for transfusion or exchange. In addition, identification of the antibody will enable the laboratory to perform additional studies of the father's blood. By determining the monozygous or heterozygous status of the blood-group substance in the father's blood, a 50 or 100% probability of future hemolytic disease of the newborn can be determined. This, in turn, will be necessary in the obstetrician's decision about future pregnancies.

Care in Blood Transfusions. Blood transfusion in the pregnant, in the young, or in those of child-bearing age, should be reserved for specific indications and should never be given lightly. In the future, it may be necessary to type both the patient and donor blood for E, c, and K as a protection against sensitization.

Testing Cord Blood. With development of a rapid method for demonstrating antibody coating erythrocytes, it may become practical to test all cord blood immediately for the presence of an antibody.

Interpreting Titer Studies. During prenatal testing, finding of a positive test should lead to an immediate identification of the antibody. In addition, the serum specimen should be carefully labeled and frozen. Any subsequent specimens from this patient referred for titer studies should then be performed in duplicate with the previous specimens. In this fashion, changes in titer may assume importance in determining the obstetric approach.

Diagnosing Hemolytic Disease. The laboratory should be prepared to diagnose hemolytic disease of the newborn due to an ABO incompatibility. In the average hospital, the syndrome appears almost as an academic point because of the general inability to make a definitive diagnosis. Many laboratories are revising down the maximum level of bilirubin permitted before exchange transfusion is resorted to. These groups are using 12 mg% as the crucial level and accordingly are doing exchanges for ABO hemolytic disease more frequently. (B. Pirofsky, Antigen-Antibody Reactions in Obstetrics: GP, XXI: 99-106, May 1960)

* * * * * *

Bacterial Infection in Gynecology and Obstetrics

Bacterial infection in gynecologic and obstetric practice, as in other fields of surgery, has demanded increasing attention in recent years as a part of the widespread current problem of bacterial infection. Infections in hospitals are more of a problem today than they were 25 years ago; some studies have revealed the startling fact that, at present, more persons with bacterial infection die of septicemia than died before chemotherapeutic and antibiotic agents were in use. This is in part due to an apparent increase in the number of infections produced by resistant gram-negative bacteria, such as E. coli, B. proteus, A. aerogenes, and P. aeruginosa. Two of these—Aerobacter and Pseudomonas—are now producing an appreciable number of serious infections and even death.

In gynecologic practice, however, most infections are caused by pyogenic bacteria—principally streptococcus and staphylococcus, sometimes in association with other organisms—and by gonococcus.

Pathogenic bacteria most often gain access to the female genital tract by way of the vagina, so that the infection is an ascending one. The outstanding

exception is, of course, tuberculous infection which is almost invariably hematogenous, first involving the tubal mucosa and from there spreading downward toward the endometrium in the majority of cases.

Occasionally, bacteria already present in the vaginas of healthy women may become pathogenic, especially in the presence of traumatized and devitalized tissue. Ascending infection may be localized in the uterine cervix for variable periods, causing cervicitis, or it may continue its upward extension to the upper part of the genital tract. Dissemination may take place in continuity or may follow the lymphatics. The typical example of the first method is the spread of gonococcus. The lymphatic route is typical of streptococcic and staphylococcic infections which are usually puerperal or postabortal in origin. They give rise to pelvic lymphangitis, thrombophlebitis, and pelvic cellulitis. Parauterine, pararectal, and paravesical abscesses are the natural result of these infections.

When the peritoneum is invaded by the pathogenic bacteria, acute peritonitis is the result. The seriousness depends on the type of infection present, the virulence of the bacteria, the resistance of the patient, and the efficacy of the therapy instituted. Pelvic peritonitis may become sealed off from the rest of the peritoneal cavity and a pelvic abscess may form which is easy to drain.

If there is obstruction to drainage of the uterine cavity in the presence of infection, pyometra may result. The most common cause of obstruction is a neoplastic lesion of the cervix that produces progressive stenosis of the cervical canal. The next most frequent cause of cervical obstruction is cicatricial retraction following surgical procedures, such as conization and cauterization and, to a lesser extent, tracheorrhaphy and curettage. Still another cause is postmenopausal sclerosis and atrophy leading to progressive narrowing or occlusion of the internal os and consequent obstruction to drainage. Less frequent causes are benign tumors, chronic inflammations, postabortal and puerperal infections and, occasionally, tuberculosis.

Management. It is imperative to adhere to sound and established principles of therapy, to provide adequate drainage, and to identify the organisms involved including determination of their susceptibility to antibiotics. It is essential that this be done before any antibiotic treatment is begun.

Certain rules can be stated for prevention and management of gynecologic and obstetric infections:

1. Avoid prophylactic and improper use of antibiotics.
2. Maintain strict asepsis and antisepsis. Recent work has demonstrated that the nasal passages are the prime source of virulent bacteria in the contamination of surgical wounds.
3. Avoid prolonged delay in performing indicated operations.
4. Obtain material for culture and identification of the offending organisms and antibiotic sensitivity testing as a guide to appropriate antibiotic therapy.

5. Employ the indicated antibiotics in adequate doses and for sufficient periods.

6. Isolate all patients with infection.

(M. Sagarra, Bacterial Infection in Gynecology and Obstetrics: J Int Coll Surg, 33: 546-551, May 1960)

* * * * * *

Serum Lipase Following Trauma to Bone

Understanding of the pathogenesis of fat embolism is being achieved slowly. The initial stage of mechanical obstruction of the pulmonary vascular bed is seldom recognized clinically. The secondary stage of chemical disruption of the endothelium of the pulmonary capillaries due to the action of fatty acids freed by hydrolysis of the neutral fat emboli is the stage at which the classic signs of dyspnea, disorientation, and petechial hemorrhages permit diagnosis of fat embolism to be made. The latent period is that period after arrival of neutral fat emboli in the lung during which hydrolysis of the neutral fat occurs with freeing of toxic fatty acids. This hydrolysis results from enzymatic activity; for this reason, study of the serum lipase in patients in whom fat embolism might be anticipated becomes of special interest.

Following trauma to bone, it is generally agreed that: (1) serum lipase and/or tributyrinase rises in a substantial number of patients; (2) increase in enzymatic activity is directly proportional to the degree of trauma to bone; and (3) with few exceptions, patients in whom a diagnosis of fat embolism can be made—either clinically or at autopsy—have an elevation of the serum lipase and/or serum tributyrinase.

The source of the increased serum lipase is the lung. The secretion of lipase as a nonrespiratory function of the lung parenchyma was first recognized many years ago. This increase is a response of the lung to the presence of multiple emboli of neutral fat. Unfortunately, significant elevations of the serum lipase do not occur until 2 to 3 days after injury; for this reason the serum lipase level is of no real value in the early diagnosis of fat embolism or in the early selection of patients in whom clinical fat embolism is apt to appear. Later on—3 to 6 days after injury to bone—the serum lipase level may provide information of real value.

In the patient with multiple injuries including an injury to the head, an elevated serum lipase may, by suggesting the possibility of fat embolism, help to evaluate the over all clinical picture and place the cerebral signs in a different perspective. Perhaps more important, a markedly elevated serum lipase in a patient with severe injuries to bone carries a good prognostic significance. This may be explained by the fact that when damage to the capillary bed of the lung is severe and hemorrhagic, infarction occurs, circulation through these areas is arrested, and lipase secreted locally cannot reach the

general circulation. On the other hand, when circulation is preserved through the involved area of lung parenchyma, the lipase secreted reaches the general circulation giving a markedly elevated serum lipase. In a general way, the serum lipase reflects the degree of disorganization of the pulmonary capillary bed. Obviously, if the patient succumbs to the mechanical effects of the embolic fat and dies quickly within 12 to 48 hours, the serum lipase will not be elevated. (L. F. Peltier, et al, Fat Embolism - The Significance of an Elevated Serum Lipase After Trauma to Bone: Amer J Surg, 99: 821-826, May 1960)

* * * * * *

Antirheumatic Action of Salicylates

Despite the fact that the antirheumatic effects of salicylates have been known for over 8 decades, the mode of action of this group of drugs remains obscure. The effects are so dramatic as to lead almost implacably to the conclusion that they cannot be accounted for on the basis of analgesic and antipyretic properties alone.

An important (and often neglected) aspect of studies on the mode of action of a drug is a consideration of structure-activity relationships. However, there are certain limitations which must be taken into account in interpreting the results of structure-activity studies, particularly where in vitro experiments are involved.

Effects on Pituitary-Adrenal System. Demonstration of the antirheumatic properties of adrenocortical hormones and ACTH led to considerable speculation that the antirheumatic effects of salicylates may be mediated through the hypothalamic-pituitary-adrenal system. Numerous studies have demonstrated striking similarities between the metabolic and anti-inflammatory effects of salicylates and the steroids, while other studies have indicated that salicylates and corticoids have some effects which are actually opposing. Their lack of completely parallel action does not seem to constitute a potent argument against the concept that the antirheumatic action of salicylate is mediated, at least in part, through the pituitary-adrenal system.

If the antirheumatic effects of salicylates are in any way dependent upon intervention of the pituitary-adrenal system, it is certain that they are not dependent upon the maintenance of elevated circulating levels of corticoids. In the present state of knowledge, dismissal of the possibility that the antirheumatic effect of salicylates is mediated through the pituitary-adrenal system or its secretions seems premature.

Metabolic Effects. A number of workers have shown that salicylate increases oxygen consumption and uncouples oxidative phosphorylation. The possibility has been considered that this may be the basis for the anti-inflammatory activity of salicylates. However, other data suggest that

their activity is not related to these processes or that the oxidative aspect is related to the effect of salicylates on the pituitary-adrenal system.

While there is little reason for suspecting that the effects of salicylate on carbohydrate metabolism and on the rheumatic process are causally related, it is possible that there is a common denominator for these and other effects.

Effects on Connective Tissue Metabolism. The action of salicylates and related compounds on the sulfate exchange of chondroitin sulfuric acid has been studied on the theory that drugs useful as antirheumatic agents might influence the metabolism of certain chemical constituents of mesenchymal tissues. Observations suggest that sodium salicylate and aspirin share with cortisone the ability to inhibit synthesis and metabolic activity of mucopolysaccharides in mesenchymal tissues; but the fact that similar effects are not produced by antirheumatic compounds structurally related to salicylate detracts from the acceptability of this phenomenon as an explanation for the antirheumatic effects of salicylates and related compounds.

Fibrinolysin Inhibition. The proteolytic enzyme, fibrinolysin, may play an important role in development of inflammation. For this reason, the possibility that anti-inflammatory substances may inhibit fibrinolysis has been investigated. Drugs have been found to inhibit fibrinolysin in vitro; however, there is not a convincing parallelism between this in vitro effect and antirheumatic properties. On the other hand, there is not sufficient information to rule out completely the possibility of a relationship between fibrinolysin inhibition and antirheumatic effects.

Effects on Immunologic Processes. Sodium salicylate and aspirin inhibit the precipitation of both a typical antiprotein and antipolysaccharide antigen-antibody system, presumably due to an increase in the solubility of the antigen-antibody complex. However, the fact that similar effects were produced by the therapeutically inactive meta- and para-hydroxy derivatives of benzoic acid suggests that there is no relationship between this experimental phenomenon and clinical antirheumatic effects.

Other findings offer evidence against the concept that the antirheumatic effects of salicylates and related compounds are mediated directly through an inhibitory effect on hypersensitivity. Data also suggest the lack of a relationship between salicylate inhibition of at least these particular hypersensitivity reactions and pituitary-adrenal stimulation.

There is a striking structure-activity parallelism between antirheumatic properties and inhibition of anaphylactic arthritis. However, it is not clear whether inhibition of joint swelling is the result of an inhibitory effect of the active compounds on immunologic processes or simply reflects the known ability of salicylates to diminish joint permeability. (Salicylate suppresses the joint swelling produced by the intra-articular injection of a variety of irritant substances under circumstances which do not suggest intervention of immunologic processes.) It is possible that these results

reflect pituitary-adrenal stimulation because similar doses of the active drugs are known to produce elevated circulating corticoid levels in guinea pigs. In addition, the structure-activity spectra of the two effects are similar.

Ionization and Chelation. The theory has been advanced that the antirheumatic effects of salicylates and similar compounds are related to the ability to chelate. The possibility of this relationship remains open, although the mechanism whereby such a relationship could exist remains obscure.

The compounds which are capable of inducing elevated circulating corticoid levels have higher dissociation constants and presumably a greater ability to form chelates than compounds which do not affect corticoid levels. Obviously, a causal relationship has not been established; however, structure-activity considerations are consistent with the possibility that there is a causal relationship.

Conclusions. It is apparent that the mechanism whereby salicylates and structurally related compounds exert their antirheumatic effects remains an enigma. None of the studies seems as yet to offer an entirely satisfactory explanation, although this may come about through additional investigation of these possibilities.

Attempts to elucidate the mode of action of antirheumatic substances are hampered by a lack of understanding both of the disease process itself and of the characteristics of the tissues which are affected. Further basic information is needed concerning chemical and metabolic properties of connective tissue, physical and chemical concomitants of inflammation, and pathogenesis of the rheumatic process. (A. K. Done, The Nature of the Antirheumatic Action of Salicylates: Clinical Pharmacology and Therapeutics, 1: 141-148, March - April 1960)

* * * * * *

Brucellosis - Experiences with 224 Patients

Knowledge of the diseases of man and animals grouped under the heading of "brucellosis" has increased considerably since the initial studies of Bruce. Bacteremic brucellosis has received much attention, but other types of brucellar infections have not been studied so extensively. The authors studied 224 patients examined at the Mayo Clinic in the 19 years, 1940 - 1958.

Brucellosis in the central portion of the United States is, to a great extent, an occupational disease as is apparent from the incidence according to sex and occupation among the patients studied. The authors classified the disease according to the following types:

Bacteremic type in which the essential characteristic is the ability to culture Brucella organisms from specimens of blood; agglutination titers

are usually high in such patients and frequently rising; victims of this type of the disease generally are acutely and severely ill.

Serologic type in which the essential characteristic is detection of a high agglutination titer in a patient with systemic manifestations compatible with the disease; it is not possible to produce Brucella organisms by culture of specimens of blood, and there is no local lesion to examine histologically and bacteriologically.

Localized type in which the essential characteristic is the growth of Brucella organisms from specific tissues of the victim, such as lung, spleen, kidney, et cetera; in these patients the process may have been present many years, often is relatively asymptomatic, but rarely is productive of recurrent systemic manifestations; agglutination titers as a rule are low or absent; results of cultures of specimens of blood are negative.

Mixed type in which the characteristics of the disease place it in an indeterminate area among the preceding types; it is exemplified by the patient having bacteremic brucellosis and simultaneous, culturally proved, localized brucellosis; also it includes such conditions as skeletal lesions from which Brucella organisms are not grown, but in which serums demonstrate a high agglutination titer.

The fact that nearly all of the authors' patients who had bacteremia were males is of interest because there was a predominance of females over males in the total registration at the Mayo Clinic during the period surveyed. That direct contact with infected animals and, especially the products of conception of such animals, is responsible for the majority of brucellar infections rather than ingestion of contaminated milk products, is perhaps suggested by the fact that most of the patients were engaged in occupations related to animal husbandry. Most infections studied were caused by B. abortus or B. suis, and only a few were caused by B. melitensis.

The majority of patients with bacteremic brucellosis had oral temperatures in excess of 100° F. at some time during the illness. However, in the years before adequate treatment was available, several patients were seen whose symptoms and signs—including fever—completely subsided, but whose blood would produce positive results of culture for several months thereafter.

Follow-up information revealed that the vast majority of patients with bacteremia had recovered in less than a year. A few who did not receive what is now considered adequate antibacterial therapy had symptoms which appeared to be related to their acute illness for more than a year after the onset of the disease. In none of the patients with bacteremic brucellosis regarding whom follow-up information was obtained did clinical manifestations of localized lesions develop. Absence of such manifestations may be due to the fact that a high proportion of these patients received treatment with antibiotic or chemotherapeutic drugs which may have successfully suppressed further growth of the Brucella organisms. Furthermore, B. suis—the

type most likely to cause localized lesions—was specifically identified in only five patients who had bacteremia.

In the authors' clsssification, there is no reference to "chronic brucellosis" because it appears that the condition of many victims of emotional, rather than brucellar, disease has been so classified with consequent confusion. On the other hand, chronic localized brucellosis, in which lesions arise in such tissues as bones, lymph nodes, and the lungs from which brucellar organisms can be grown, is a clinical entity. As a rule, chronic localized brucellosis is not associated with marked systemic reaction, but rarely is a patient encountered in whom severe constitutional manifestations may recur for years prior to isolation of the organisms from various tissues. Spondylitis—in which brucellar organisms invade an intervertebral disc—is the most usual type of skeletal involvement. Bones, such as the humerus, femur, skull, and ribs sometimes are affected; a suppurative arthritis is not common, but prepatellar bursitis is not infrequent. The gallbladder, liver, spleen, popliteal aneurysm, and kidneys also may become foci of chronic brucellar infection, and Brucella organisms have been recovered from such tissues removed at operation.

All patients with bacteremic brucellosis had agglutination titers in excess of 1: 200 at some time during their illness. Of the patients with culturally proved localized infections, no agglutination was detected in the serum of six patients, and agglutination titers in the serum of most patients were low. This may have been due to the fact that most localized lesions were well encapsulated, thus keeping the antigen from the general circulation.

Although brucellosis is diagnosed with certainty only by cultivation of brucellar organisms from specimens of the patient's blood, body fluids, excreta, or tissues, the agglutination test is of great value. Limitations of the agglutination test include:

1. Vaccination against cholera, use of brucellergin, and occurrence of tularemia may induce antibrucellar agglutinins.
2. An incorrect diagnosis may be made in a patient with an unrelated disease who has a residual agglutination titer from previous brucellosis.
3. The serum of patients with chronic localized lesions from which brucellar organisms have been isolated may give negative agglutination reactions.

It appears inadvisable to make a diagnosis of brucellosis unless (1) brucellar organisms have been produced by culture, or (2) brucellar agglutinins are present in high or increasing titer in patients strongly suspected clinically of having the infection. The authors do not employ skin testing in patients suspected of having brucellosis because, in their hands, positive results of such tests cannot be correlated well with the disease; also, the ability of such tests to induce antibrucellar agglutinins can prove confusing.

Endocarditis is a complication which has been a cause of death in patients with brucellosis. The possibility that aortic stenosis may originate on the basis of brucellar endocarditis has been raised.

Some of the patients reported with either acute bacteremic or serologic brucellosis did not receive any type of therapy; most were treated with various antibiotic agents or combinations of antibiotics. In 1949, Heilman demonstrated that chlortetracycline combined with streptomycin was more effective than was chlortetracycline alone in suppressing growth of Brucella organisms in mice. Tetracycline when combined with streptomycin is as effective in suppression of the growth of Brucella organisms as is chlortetracycline. Relapse rates and length of treatment required in brucellosis are significantly reduced with the combined form of therapy. The Joint FAO/WHO Expert Committee on Brucellosis has recommended tetracycline-streptomycin therapy as the regimen of choice.

In treatment of acute bacteremic and serologic brucellosis, the authors employed 500 to 750 mg tetracycline or one of its analogues given orally every 6 hours and 1 Gm of a streptomycin agent injected intramuscularly twice daily for 2 weeks. In the presence of chronic localized brucellosis, the amount of streptomycin is reduced to a total of 1 Gm daily and combined treatment is given for 4 weeks.

In the recommended dose, streptomycin or dihydrostreptomycin rarely causes damage to the vestibular or auditory function of the 8th cranial nerve. Because deafness is more serious than impairment of vestibular function, it appears that therapy with streptomycin alone, rather than a combination which includes dihydrostreptomycin, is preferable. (A. Schirger, et al, Brucellosis - Experiences with 224 Patients: Ann Intern Med, 52: 827-837, April 1960)

* * * * * *

Management of Paroxysmal Tachycardia

Paroxysmal tachycardias frequently occur in healthy individuals and are characterized in many instances by their short duration and paucity of symptoms. In paroxysmal tachycardia, the heart rate need not be extremely rapid; any pacemaker-forming impulses at a rate more rapid than the basic rhythm will take over. Accordingly, paroxysmal tachycardias with rates of 130 or less may be observed. Such a state often is diagnosed as sinus tachycardia.

The correct diagnosis of paroxysmal tachycardia is most important in a patient with acute myocardial infarction. The increased rate may be accompanied by a fall of blood pressure, liver enlargement, and other signs of congestive failure or shock which erroneously may be thought to be due to the primary lesion. In such patients, the entire clinical picture may improve if the tachycardia is arrested by carotid pressure. Even when the tachycardia produces symptoms, recognition may be difficult as the physician may not see his patient when the tachycardia is present and the symptoms may not be associated with a tachycardia.

Many physicians have undue concern about paroxysmal tachycardias and they try to abolish this abnormality with means which endanger the patient much more than does the tachycardia. Certain episodes are to be treated as emergencies; these include attacks complicating myocardial infarctions and those occurring in patients who are on the verge of decompensation. In the absence of such emergencies, tachycardia should not be treated without first taking an electrocardiogram. Treatment as well as prognosis will depend on the type of tachycardia found.

Atrial flutter responds less rapidly to therapy than paroxysmal atrial tachycardia; treatment should be done under hospital supervision. Ventricular tachycardia is even more ominous and requires immediate hospitalization. The ECG may clarify many iatrogenic tachycardias (digitalis toxicity) which otherwise would go unrecognized or would be aggravated by continued therapy.

Except in the special emergencies mentioned, tachycardia should not be treated by an IV injection of the numerous drugs recommended for this purpose. It cannot be denied that an IV injection of quinidine or quinine, magnesium sulfate, or some of the pressor amines often brings instantaneous success. However, all these injections may cause serious effects and, in a small percentage of patients, even death. Such a risk is not justified in an attack which can be terminated by other means. Even a normal heart will be dilated and the systole weakened after an IV injection of quinidine. Many substances which quickly abolish an attack of tachycardia also may precipitate one.

When an injection is needed to terminate a paroxysmal tachycardia as rapidly as possible, the drug of choice is digitalis. There is only one contraindication to IV digitalis administration; the patient already may be under the influence of the drug. If no digitalis has been received for 3 weeks prior to the examination, digitalis will not be harmful. It often helps and should be given even in ventricular tachycardias. The peak of action of a pure glycoside of the drug occurs within 60 minutes.

In ventricular tachycardias, the injection of pronestyl may be lifesaving. If given intravenously, the injection must be made very slowly and the blood pressure must be constantly under observation and control. It has been recommended that IM injections of 0.5 to 1.0 Gm of pronestyl gluconate be used because it apparently does not provoke a dangerous hypotension.

Although statistics vary on the efficacy of vagal reflexes in abolishing a paroxysmal atrial tachycardia, the frequency of success and the absence of harmful side effects justifies their initial use. Carotid pressure is the most effective form of vagal reflex and should be tried carefully; use of "carotid massage" is not advocated.

Most attacks which do not respond to one of the vagal reflexes will subside with a few oral doses of quinidine. If the drug cannot be given because of hypersensitivity or if the response is not satisfactory, oral digitalis therapy is the next choice. Because most investigators believe that paroxysmal

tachycardias are due to rapid impulse formation in a cell, anything which changes the electrolyte pattern and transmembrane electrolyte flow in this cell may abolish a tachycardia. Therefore, occasional success may be seen with rauwolfia, atarax, or antihistamine preparations.

Prevention of new attacks is no problem if they occur rarely. No drug therapy will be advisable in such patients. In some rare patients, attacks of tachycardia of rather short duration may be present almost constantly. They often require large doses of quinidine or digitalis for control which may not be well tolerated. Such tachycardias may gradually subside—frequently after many years; but in some instances, they may slowly lead to cardiac dilatation, cardiac failure, and death.

In other patients, the tachycardias recur frequently—several times each week or month. The usual preventive doses of quinidine or digitalis are too small and ineffective and larger ones are not advisable because of unpleasant side effects. A combination of moderate doses of each drug is indicated in such patients. If ineffective, psychotherapy and encouragement are all that remain—they are of inestimable value. (D. Scherf, Management of Paroxysmal Tachycardia: Dis Chest, XXXVII: 569-572, May 1960)

* * * * * *

Preoperative and Postoperative Care of the Diabetic Patient

The care of the diabetic patient in situations requiring surgical treatment cannot be reduced to any simple set of rules. Not only will the condition requiring operation and the nature of the surgical procedure have their influence, but the pattern of the particular case of diabetes will have much to do with determining the response of the patient to the stress.

Diabetic patients may be divided into two large categories, although some may not fit clearly into either group. The first category may be termed "juvenile" or "insulin-sensitive" and the second, "adult" or "insulin-insensitive."

The age at onset of diabetes usually gives a good clue to the manner in which the disease is likely to behave—diabetes beginning in childhood or young adult life being relatively difficult to control. In contrast, in many cases of diabetes having onset in adult life, ketosis develops only under the stress of some severe illness or trauma. During the first one or two years after onset of diabetes in childhood, the disease may behave in a stable or "adult" manner for a number of months. Such stability may disappear, however, with the stress of trauma or illness and all children should be regarded as having juvenile, or insulin-dependent, diabetes.

Diabetics in the first category must be watched closely during and after an operation. Insulin must be prescribed with great precision. Nutrition is

precarious; a few hours of heavy glycosuria in such cases may indicate considerable destruction of protein and loss of nitrogen. Patients in the second category require somewhat less rigorous supervision; in some circumstances, diabetes which is ordinarily stable may become erratic and unstable in its behavior.

The nature of the surgical problem has much to do with the formulation of a plan of management. Infections, fractures, and hyperthyroidism are notorious for rendering diabetes more severe and unstable. In such situations, it may be desirable to accept a less than ideal degree of control of the diabetes and proceed with surgical factors that will correct the aggravating factor.

Generally, however, the best possible control of diabetes before operation is desirable. This means not only that glycosuria and hyperglycemia should be corrected so far as possible, but that the patient's nutritional state should be considered. A poor state of nutrition increases the risk for the diabetic more than for the nondiabetic patient because even slight exacerbation of diabetes by stress of operation results in drain on already depleted stores of protein.

Presence of degenerative complications of diabetes may require special consideration. Diabetic neuropathic conditions, peripheral arteriosclerotic changes, coronary artery disease, and nephropathic changes may require special precautions and attention.

Selection of the immediate preoperative dose of insulin is all-important. A number of factors must be taken into consideration: the usual dose of insulin required by the patient, the time of the operation, and the probable duration of surgical procedure and anesthesia. In general, it is desirable to schedule an operation on a diabetic patient as early in the day as possible. If the operation must be scheduled later in the day and if feeding by mouth is undesirable, dextrose should be given parenterally with the amount of insulin needed to provide for its utilization. Hyperglycemia resulting from parenteral administration of dextrose does not have the serious significance of hyperglycemia caused by uncontrolled diabetes, but will act to diminish ketogenesis, especially if insulin is given in conjunction with it. On the other hand, intravenous administration of dextrose invalidates the blood sugar level as the physician's index of the status of the diabetes at the moment; if given in large enough quantities to cause heavy glycosuria, it will favor dehydration.

In most instances, it is desirable to postpone use of dextrose and obtain a determination of the blood sugar level in the hour after completion of the surgical procedure. Knowledge of the concentration of blood sugar at this point may be helpful in evaluating the effect of the operation on the status of diabetes, and it guides the administration of insulin during the next 12 or 24 hours. If this course of action is chosen and no dextrose is to be given during the operation, the preoperative dose of insulin should be modest. Occurrence of hypoglycemia during the course of anesthesia might not be recognised and

could easily be catastrophic. Usually, it is safe to give one-fourth to one-fifth of the usual day's dose in the form of a slowly acting insulin, such as protamine or ultralente. On the other hand, even such a relatively small dose as this might cause hypoglycemia in the unstable diabetic patient, particularly if the surgical procedure is prolonged.

During the postoperative period, the patient should receive carbohydrate in amount equal to 150 to 200 Gm of dextrose in each 24 hours. Furthermore, it is preferable that it be given as continuously as possible. In general, minor degrees of glycosuria are preferable to hypoglycemic reactions.

Ordinarily, the amount of insulin needed during the entire day of operation is approximately equal to the usual daily dose. Usually, this is given in divided doses of a rapidly acting form—such as crystalline—at intervals of 4 to 8 hours depending on tests of the urine at the moment. The insulin requirement may be greatly increased by some procedures, particularly thyroidectomy for Graves' disease. Surprisingly, a hemorrhoidectomy or other seemingly minor procedure sometimes may cause a threefold or fourfold increase in the need for insulin while more extensive abdominal procedures may have little effect on the status of the diabetes. An amputation may cause an abrupt rise in insulin requirement by virtue of the trauma involved; but if active infection or gangrene has been present, amputation may result in a fall in insulin requirement. In any event, the attending physician should be alert for all possible variations in the status of the diabetes and be ready to change his plans accordingly.

Diet during the convalescent phase may pose a problem. Ordinarily, diets prescribed for diabetic patients exclude all sugar in order to minimize postprandial hyperglycemia and glycosuria. There may be a real problem in providing appealing menus within the further restrictions imposed by the operation. In these circumstances, it is often desirable to order the diet appropriate for the stage of convalescence of the particular surgical procedure involved without regard to the presence of diabetes. Later, when the patient is able to eat a more varied diet, he can return to his usual diabetic restrictions. (C. F. Gastineau, The Preoperative and Postoperative Care of the Diabetic Patient: J Int Coll Surg, 33: 497-501, May 1960)

* * * * * *

A disease is a whole of vital manifestations, elicited by some pathogenic (extrinsic) factor or groups of them, and displayed by organisms whose reactions, though similar in some respects, differ from individual to individual as to the degree but also as to type. More generally speaking, the organism, though diseased, continues to live a life and an evolution of its own. Subsequently, there are as many intrinsic features of diseases as there are diseased individuals. —Riese

National Health Plan

A National Health Plan, developed by the government with the assistance of professional health associations, has been issued by the Office of Civil and Defense Mobilization.

Issued as Annex 18 to the broader National Plan for Civil Defense and Defense Mobilization, the Health Plan outlines the areas of responsibility, organization, functions, and programs for health services under national emergency conditions, including a survival and recovery period that would follow any direct attack on the United States.

In issuing the Health Annex, Director of Civil and Defense Mobilization, Leo A. Hoegh, said that its major premise is the responsibility of individuals and of professional associations in the health field to take an active part in civil defense and defense mobilization planning and training in their communities.

Behind the Plan are the assumptions that a nuclear attack on this country would:

1. Disrupt organized health services in many communities.
2. Cause severe shortages of health supplies, manpower, and medical facilities.

The basic principle in dealing with these problems is the responsibility of individuals and families to be self-sufficient for a limited period of time after an attack until help reaches them. Shortages must be met with conservation measures, improvisations, substitutions for supplies and methods of care, and maximum use of auxiliary personnel.

Preparedness measures for the family include training in first aid for at least one family member, keeping immunizations current, and maintenance of supplies of survival items in homes or shelter areas.

Mr. Hoegh has stressed that the Plan is essentially a guide for State and local authorities as they work out emergency health programs in their areas in cooperation with members of professional health and medical associations, the medical supply industry, business and civic organizations, and other agencies with health interests and responsibilities.

While the Plan emphasizes that Federal and State guidance is necessary and must be assured, Mr. Hoegh pointed out, it is at the local community level that the success of pre-attack planning will be determined. This success is dependent on participation by members of the professions and their associations.

Under the National Health Plan, responsibility for health resources acquisition, management and control rests with the Office of Civil and Defense Mobilization. The Health Services Office of OCDM provides staff services for the Director in health matters. Subject to the policy direction and central program control of OCDM, primary responsibility in the Federal Government for civil defense health and civilian health mobilization programs is assigned to the Department of Health, Education, and Welfare.

Federal Nursing Service Award

CAPT Ruth A. Houghton NC USN, Director of the U. S. Navy Nurse Corps, current Chairman of the Nurse Section and member of the Executive Council of the Association of Military Surgeons of the United States, recently announced that an annual award for accomplishments by a nurse in the Federal Nursing Service has been established by Medical Services of Hoffman-LaRoche, Inc., Nutley, N. J.

Establishment of this award for nurses is gratifying recognition of the significant contribution they have made to military medicine through more than a half century of service in Federal Nursing Agencies.

The award—Federal Nursing Service Award—will be made each year to a member of the nursing profession employed by the Federal Government, based on a paper submitted by the applicant which reports a beneficial study of, or contribution to, professional nursing in any area of practice. The awardee will be selected by the Board of Award of the Association of Military Surgeons of the United States. The recipient, who must be a member of the Federal Nursing Services at the time of selection for the award, will be presented with an appropriate scroll and an honorarium of $300 at the Honors Night Dinner held during the annual convention of the Association. All members of the Federal Nursing Services holding civilian or military appointments are eligible to compete for the award irrespective of membership in the Association of Military Surgeons.

The subject material presented in the paper may be the result of study or actual experience, or a combination of both. Credit will be given to the amount and quality of the original work, but the primary consideration in selection of the awardee will be the contribution made to professional nursing by the individual. Requirements for submission of papers may be obtained from the Secretary, Association of Military Surgeons of the United States, Suite 718, 1726 Eye Street, N. W., Washington 6, D. C. The deadline for submission of papers for this year's award is 1 August 1960.

While the Federal Nursing Service Award is offered only to a member of the nursing profession employed in the Federal Government agencies, nurses are eligible to compete with all medical and allied medical service personnel for several other awards offered through the Association of Military Surgeons of the United States.

* * * * * *

An investigator cannot be too certain of his facts—they are sure to be challenged by someone or other—and further, he cannot take too much pains with his report. He will realize that to tell the exact truth is one of the most difficult things in the world. —Mervyn Gordon

Directives

BUMED INSTRUCTION 6150.15A 16 May 1960

Subj: Medical records, clinical records, and x-rays in custody of the Veterans' Administration; procedure for procurement and return

This instruction sets forth procedure for procurement and return of subject records.

BUMED INSTRUCTION 6710.45 27 May 1960

Subj: Narcotics, alcohol, alcoholic beverages and controlled drugs; control procedures for

This instruction provides standardized control procedures for the handling and prescribing of narcotics, alcohol, alcoholic beverages, and controlled drugs by Medical Department personnel.

BUMED NOTICE 6230 20 May 1960

Subj: Poliomyelitis vaccination, requirement for

This notice directs attention to the need for immunization of naval personnel and their dependents against poliomyelitis, and directs compliance with BuMedInst 6230.1B (Immunization requirements and procedures) in immunization of all naval personnel against poliomyelitis.

BUPERS NOTICE 1000 12 May 1960

Subj: Use of military titles in connection with commercial enterprises

This directive invites attention to Art. C-11111, BuPers Manual and Art. 1254, U.S. Navy Regs., which prohibits members of the naval service, officer and enlisted, while on extended active duty, from using their military titles in connection with any commercial enterprise.

* * * * * *

Organization must come, in all states and in all sciences. The situation must be accepted; but in that situation, as in all political situations, there are great dangers as well as great opportunities. Organization is no substitute for genius. No amount of bureaucracy could have discovered penicillin. —Ogilvie

* * * * * *

From the Note Book

Nurse Corps Educational Program. Representing Navy and Air Force medical facilities throughout the U.S., 27 nurses attended a two-week series of institutes entitled "Personnel Development" at the U.S. Naval Medical School, NNMC, Bethesda, Md., commencing 5 June 1960. These sessions were the fourth in a series of institutes, courses, workshops, and seminars under the Navy Nurse Corps Educational Program which has the objective of providing improved patient care for military personnel and their dependents through the continuing professional development of Nurse Corps officers.

Forensic Sciences Symposium. The Armed Forces Forensic Sciences Symposium, the first of its kind in the history of the Armed Forces, was held recently at the Armed Forces Institute of Pathology. There were 110 officially registered students and a faculty of 43 for the three-day meeting which was televised in its entirety. The registered television student body numbered 200, with approximately an additional 500 viewing the sessions on a part-time basis. The consensus was that the Symposium filled a gap in the relations between the fields of medicine, law, and law enforcement, as well as between the three Armed Services. (AFIP Letter, 1 June 1960)

National Cancer Conference. The Fourth National Cancer Conference will be held at the University of Minnesota, Minneapolis, 13 - 15 September 1960. The theme of the Conference is "Changing Concepts Concerning Cancer," and more than 2,000 scientists and physicians from the U.S. and abroad are expected to attend. The Conference is sponsored jointly by the American Cancer Society and the National Cancer Institute of the Public Health Service. The Conference will focus on three general topics—etiology, pathogenesis and spread, and therapy of malignant disease. Interested scientists and physicians are invited to attend.

Medical Record Librarians. U.S. Naval Hospital, St. Albans, N.Y., was host recently to an all day meeting of the Greater New York Association of Medical Record Librarians. Representatives from groups in Connecticut, New Jersey, and New York were invited to participate in the meeting. (PIO, USNH, St. Albans)

Peptic Ulcers in Pulmonary Emphysema. A statistical study of hospitalized patients indicated a significantly increased incidence of chronic peptic ulcer in chronic obstructive pulmonary emphysema. Of 478 patients studied, 22.7% had evidence of associated emphysema and peptic ulcer. A control group of 3225 patients of the same age group without emphysema revealed an incidence of 2.7%. (L. Zasly, et al, Dis Chest, April 1960)

Hepatitis Incidence. For the week ending 21 May 1960, a total of 895 cases of infectious and serum hepatitis were reported to the National Office of Vital Statistics. Of the cases, 133 were reported in California, and 6 States reported from 54 to 66 cases. Figures were not included from Kentucky which has been reporting an average of about 40 cases during the last few weeks. The total for the week is close to two and one-half times the figure for the comparable week in 1959 and is the second highest weekly figure reported this year—938 cases were reported for the week ending 9 April 1960. (Morbidity and Mortality, PHS, DHEW, Vol. 9, No. 20)

Parenteral Iron. In relation to comment on withdrawal from sale of an intravenous iron preparation at the request of the Food and Drug Administration, because of a possible etiologic relationship with sarcoma, the Medical Letter on Drugs and Therapeutics (May 13, 1960) restates a warning on all uses of parenteral iron preparations: No parenteral iron preparation should ever be used unless severe iron deficiency has been clearly established, and then only in patients in whom it is impossible to use oral iron therapy effectively.

Corticotropin in Myasthenia Gravis. Use of corticotropin for treatment of myasthenia gravis has been largely neglected in recent years, because it has been considered too dangerous. The authors suggest that reevaluation of this form of therapy be made in selected cases, chiefly those without prominent bulbar weaknesses. Good results followed use of this form of treatment in six selected cases. It is proposed that not only thymus but also other lymphatic tissues might be the source of the myoneural toxin of myasthenia gravis—corticotropin may act by causing lysis of these tissues. (L. Freydberg, Ann Intern Med, April 1960)

Proteolytic Enzymes. A promising development of recent years has been the application of proteolytic enzymes to the therapy of disease in the human. Originally, applied directly to the diseased area to effect a local enzymatic debridement, proteolytic enzyme therapy is now being extended on a systemic basis to widen considerably the scope of its applicability. This report summarizes the current state of knowledge of proteolytic enzymes as therapeutic agents. (S. Sherry, A. Fletcher, Clinical Pharmacology and Therapeutics, March - April 1960)

Splenoportal Venography. Percutaneous splenoportal venography—radiographic demonstration of the splenoportal-intrahepatic venous circulation and its tributaries by means of rapid transcutaneous injection of a radiopaque medium into the splenic substance—is considered by the authors to be a safe and effective method for the study of the portal venous sytem. They consider that it provides valuable information obtainable in no other manner. (S. Zeid, et al, Ann Intern Med, April 1960)

Antimicrobial-Steroid Treatment of TB. Observing 30 patients receiving a combination of steroid hormone and antimicrobial therapy, the authors concluded that combined therapy is, at present, the best form of treatment of all patients with active pulmonary tuberculosis. No patient showed x-ray deterioration; all patients showed immediate symptomatic improvement. Comparison with 30 patients treated identically—except for omission of steroid hormone—revealed the advantage of the added steroid. (H. Marcus, P. Christopoulos, AMA Arch Intern Med, April 1960)

Cat Scratch Disease. Reporting from observations on 83 cases of this disease, the authors point out that it is a benign endemic infection with a subacute lymphadenitis as the chief clinical feature. The causative organism is probably a virus, but so far it has not been isolated. Certain unusual features may be encountered: arthralgia, phlebitis, erythema nodosum, splenomegaly, encephalitis, and eosinophilia. No antibiotics have been found effective. (W. Spaulding, J. Hennessy, Amer J Med, April 1960)

Antibodies in Acute Rheumatic Fever. Because some patients with acute rheumatic fever do not show diagnostic levels of ASO or ASH titers, two more recent antibody tests—anti-diphosphopyridine-neucleotidase (anti-DPNase or ASDA) and antidesoxyribonuclease B (anti-DNAse B)—are particularly helpful in establishing a definite diagnosis in questionable cases. (L. Wannamaker, E. Ayoub, Circulation, April 1960)

Diagnosis of Pertussis. The fluorescent antibody staining technique gives promise of becoming a valuable tool in clinical laboratory diagnosis and demonstration of Bordetella pertussis. This method, if proved reliable, will provide a rapid means of establishing the diagnosis of pertussis in its early stages. Thus, it may reduce unnecessary exposure of others and allow initiation of appropriate treatment to diminish the severity and complications of the disease. (P. Donaldson, J. Whitaker, AMA J Dis Child, April 1960)

Assessment of Adrenal Cortex. The ACTH test was performed in a series of cases of adrenocortical hyperfunction and hypofunction. The authors' study confirms the findings of earlier investigators that adrenocortical adenoma and adrenocortical hyperplasia with Cushing's syndrome exhibit different reaction patterns to stimulation with ACTH. In addition, existence of patients with a normal resting excretion of corticosteroids but complete lack of adrenocortical reserve capacity was confirmed. Results indicate that the ACTH test for assessment of adrenocortical reserve capacity is a reasonable procedure. (G. Birke, et al, Endocrinology, April 1960)

* * * * * *

DENTAL SECTION

Failures in Dental Amalgam

Failures in dental amalgam are due to many factors, among which inadequate cavity preparation is most important. A common defect in cavity preparation is inadequate extension. Preparations on the occlusal and proximal surfaces should be extended fully to resistant boundaries and should include all susceptible regions.

Conversely, extensions that are too radical may seriously weaken a tooth; special caution must be directed to the lower bicuspids and distal regions of the upper and lower 1st molars. A frequently observed flaw at occlusal margins is ditching which develops slowly as the filling is subjected to masticatory stress. Marginal ridge discrepancies result from unnecessary flaring at the buccal or lingual walls or both, while the proximal surface is being prepared. These flaws mature as weakened portions of the amalgam collapse under occlusal stress. Occasionally, a compound amalgam restoration fractures through its bulk in the region of occlusal constriction between the cusps due to an inadequate proximal retention form which causes the proximal portion to rely completely on the occlusal portion for stability. (CAPT R. B. Wolcott DC USN, Failures in Dental Amalgam: J. A. D. A., 56: 479-491, April 1958)

* * * * * *

Fabrication of Crowns Without Lab Facilities

An acrylic jacket is recommended by the author for use until a more permanent jacket is made.

The tooth is prepared in the manner best suited to the operator, except that a shoulder is not desirable. A chamfer finish, or merely a taper finish to the gingival attachment, is employed. In lieu of the gold casting at the gingival margin, an annealed copper band collar is used to obtain a definite finish line at the gingival attachment and to help prevent spreading of the acrylic and eventual leakage beneath the gingiva. Also, it will impart strength to the finished jacket crown.

An annealed copper band that fits snugly at the gingival attachment is contoured accurately to the preparation. The gingival adaptation is checked

with an explorer. A cut is made from the incisal edge toward the gingival margin so that only about 1 mm remains above the gingiva on the labial, incisal, and distal sides and 3 mm on the lingual side. Two or three cuts are placed on the lingual part of the band that extends above the gingiva to give a mechanical lock for the acrylic.

The copper band collar is placed in position on the tooth beneath the gingiva. The tooth is isolated with cotton rolls and dried thoroughly. With a sable brush, a thin mix of cold-cure acrylic is painted on the tooth and copper band. A small amount of acrylic powder and liquid is placed in a mixing jar; when it has set long enough to be easily handled, it is placed on the tooth and contoured with the fingers. The patient closes the teeth in centric occlusion, and the assistant sprays water on the area until the acrylic hardens. It is then removed with a crown remover and a thin mix of acrylic is painted on the area of junction of copper band and crown and on any other area necessary.

Disks and burs are used in carving, care being taken not to destroy the mesial and distal contact. The crown is tried on the tooth and is checked for high spots in centric occlusion and in lateral and protrusive excursions. The crown is then polished with pumice and whiting. The prepared tooth is dried, the exterior of the jacket is lubricated, and the crown is cemented in place. (CDR E. L. Doyle DC USN, Fabrication of Crowns Without Laboratory Facilities: Armed Forces Medical Journal, 7: 693-694, May 1956)

* * * * * *

ACD Answers on Ethics

A report published in the April 1960 issue of the American College of Dentists (ACD) Reporter contained the following questions and answers on the subject of "conduct" in relation to the ethics of dentists. Even though these are specific guides for Fellows in the ACD, the guidelines set forth should be observed by all dentists.

Q. Are lecture tours by Fellows of the College considered in order?

A. Yes, if planned and directed by an acceptable educational agency. Cooperation of societies in providing expenses and honorarium for essayists are not considered out of order, if reasonable. However, tours or series of lectures developed by an individual smack of self-aggrandizement and/or profit motive and are not acceptable.

Q. Should study clubs be under organizational auspices?

A. Generally speaking, yes. However, in those instances where persons get together informally for study purposes, this may not be necessary. In all cases, however, study clubs' efforts should be on a not-for-profit basis.

Q. What is the attitude of the College toward its members contributing to other than professionally owned and/or controlled dental periodicals?
A. The College feels that literary contributions should be made to the professionally owned and/or controlled publications.

Q. Considering the small number of acceptable publications or outlets for original papers, is the College justified in its rigid attitude in this regard?
A. In the first place, there are many more acceptable publications or outlets than there are objectionable ones. Many of these have only limited circulation. Our literature would be much improved if these acceptable outlets even with limited circulation were supported rather than thinking of broad "publicity."

* * * * * *

Dental Technician Training

Requests are being received in the Dental Division, Bureau of Medicine and Surgery, from dental technicians second class for a course of instruction in Medical Administrative Technic, citing BuMed Instruction 1570.4E as reference. Among Group XI personnel, chief and first class dental technicians are eligible for this training in accordance with BuMed Instruction 1510.2B. This instruction is supplemental to the Catalogue of Dental Technicians Schools and Courses (NavMed P-5029) concerning training available to Group XI Dental Ratings.

* * * * * *

Pacific Coast Inspector Redesignated

The office of Inspector, Naval Dental Activities, Pacific Coast, has been redesignated U.S. Naval Dental Activities Field Branch, Bureau of Medicine and Surgery Pacific Coast. The activity as redesignated is under the management control of the Chief, Bureau of Medicine and Surgery. The revised mission of the subject activity is: To represent the Bureau of Medicine and Surgery in all matters concerning professional, technical, and administrative fields related to dentistry in the area; to direct, coordinate, supervise, and inspect dental activities; to support, as assigned, the Chief of the Bureau of Medicine and Surgery; and to maintain liaison with various dental organizations in the area.

* * * * * *

Personnel and Professional Notes

Southern California SDA. Navy Dental officers participated as follows in the recent military symposium in connection with the annual meeting of the Southern California State Dental Association:

Marine Corps Recruit Depot, San Diego, Calif. ; CAPT J.G. Rogers Jr, DC USN - Prosthetic Rehabilitation of Recruits at MCRD, San Diego.

U.S. Naval Training Center, San Diego, Calif. ; CAPT G.D. Richardson DC USN and LT L.E. Mark DC USNR, Adequate Post Damming for Complete Maxillary Dentures; LCDR J.E. Hartnett DC USN and LT J.R. Buntain DC USNR - Complete Denture Remount Procedures; LT B.J. DeVos DC USN - The Surgical Flap; LT W.L. Diefendorf DC USNR and LT L.T. Engman DC USNR - Denture Staining.

Naval Dental Clinic, Camp Pendleton, Calif. ; CAPT W.I. Gullett DC USN - Occlusal Rests, A New Concept.

The following Navy Dental officers participated in the J.C. Metcalf Golf Foil Seminar: CAPT E.R. Hildreth Jr, DC USN and LCDR C.A. DeLaurentis DC USN, U.S. Naval Amphibious Base, Coronado, Calif. ; LTs H.J. Dorion DC USNR and J.R. Buntain DC USNR, U.S. Naval Training Center, San Diego, Calif. ; and LT R.G. Thompson DC USN, USS NEREUS (AS-17).

LCDR Brokaw Presents Lecture. LCDR Rodman Brokaw DC USN presented a lecture, The U.S. Navy Dental Technician, 9 May 1960, at the "Career Day" program, Washington Senior High School, Pensacola, Fla.

CAPT Frechette Participates in Minnesota State Dental Meeting. CAPT A.R. Frechette DC USN, Deputy Chief, Dental Division, Bureau of Medicine and Surgery, participated in the programs of the 77th Annual Session of the Minnesota State Dental Society, St. Paul, 25 - 27 April 1960. The presentation was a lecture, Prosthetic Appliances Associated with Abnormal Jaw Relations, in which CAPT Frechette demonstrated that countless conditions involving abnormal jaw relations may occur. As part of a Closed Circuit TV program CAPT Frechette presented Improved Partial Dentures in which emphasis was placed on fundamentals and a simple approach to denture design.

CDR Welden Commended. CDR Robert B. Welden DC USN, Senior Dental Officer, USS CASCADE, was recently commended by Dr. George J. Carrellas, President of the Newport, Rhode Island Dental Society for his efforts to promote professional liaison between the Navy Dental officers and civilian dentists. In the commendation, Dr. Carrellas stated:

> "The Naval Dental officer population in Rhode Island often is about one-quarter of the number of civilian dentists in our state. Therefore, they represent definite professional influence and contribute much to our

scientific and postgraduate learning. Dr. Welden has fostered and encouraged Navy-civilian goodwill by inviting us to be guests of the Navy and by giving his own scientific talk to our society on ocular and facial prosthesis with which he was privileged to work at Bethesda."

Philippine Dental Seminar. The Cavite Dental Society held its first annual dental seminar on 8 May 1960 at Tagaytay, Cavite, P. R. Dental officers from the U. S. Naval Station, Sangley Point participating in the meeting were: CAPT Anthony K. Kaires - Mouth Preparation for Removable Partial Dentures; LT Richard D. Ulrey - Multiple Cavity Preparations for Amalgam Restorations; and LT Richard O. Gibbs (USNR) - Periodontitis vs. Periodontosis.

Dr. MacGregor Lectures at NDS. Dr. Alexander B. MacGregor, Birmingham, England, presented a lecture, The Role and Distribution of Acid in the Carious Process, to staff, resident, and postgraduate Dental officers, and civilian and military guests, 3 May 1960, at the U. S. Naval Dental School, National Naval Medical Center, Bethesda, Md. Dr. MacGregor, Professor of Dental Surgery and Director of Dental Studies at the University of Birmingham School of Dental Surgery, is a well known lecturer in the field of dental research both at home and abroad and has been awarded numerous prizes for his research work. Dr. MacGregor is an examiner for dental subjects at the Universities of Manchester, Sheffield, Bristol, and Durham; he is Chairman of the Examinations Committee of the Board of Faculty of Dental Surgery of the Royal College of surgeons; serves as civilian dental consultant to the Royal Navy; and holds offices in many dental organizations.

Tennessee Dental Meeting Dental officers and technicians under the direction of CAPT Wendell Naish, Dental Officer, U. S. Naval Air Station, Memphis, participated in the program of the 93rd Annual Session of the Tennessee State Dental Association in Memphis, 1 - 5 May 1960. Table clinics were presented by: CAPT W. M. Marking - The Factor of Equalization and Distribution of Stress in Partial Denture Design; and LT B. C. Terry - One Sitting Technic of Endodontia Utilizing the Van Zile Isolator. A Dental Department exhibit, Training Aids Utilized in In-Service Mass Casualty Treatment Program, demonstrated use of manikins, moulages, and other training aids used in casualty treatment training programs of Navy Dental personnel. In addition, the Navy Dental Corps three-part film on Endodontia was presented.

Dr. Timons Lectures at NDS. Gerald P. Timons, Ph. G., University School of Dentistry, Philadelphia, Pa., presented a lecture, Some Dental Problems in an Exploding Population, at the U. S. Naval Dental School. Dr. Timons pointed out some of the greater responsibilities which the dental profession, particularly the younger men, must assume in order to meet the needs of a steadily increasing population.

AVIATION MEDICINE DIVISION

Instruction in Aviation Medicine

Classes at the U. S. Naval School of Aviation Medicine, Naval Aviation Medical Center, Pensacola, Fla., scheduled to convene in July and October 1960 are filled. Applications are now being considered for the next available class scheduled to commence on 9 January 1961. Particularly desired are applicants in the grade of lieutenant commander to fill billets as Senior Medical Officer of carriers. A selected group of young men will be needed for research in bioastronautics and in manned space operation.

Requests should be addressed to the Chief, Bureau of Medicine and Surgery, Department of the Navy, Washington 25, D. C., with the subject: "Course of instruction in aviation medicine - request for." Applications should include the following service agreement: "If my request is approved, I agree to remain on active duty for one year beyond the completion of the course, or for six months beyond my current obligated service whichever is longer."

Further information concerning the course may be obtained by writing the Director, Aviation Medicine Operations Division, Bureau of Medicine and Surgery, Department of the Navy, Washington 25, D. C.

* * * * * *

Spectacle Lenses for Aviators

Double segment bifocal spectacles are available now for aviators and flight surgeons at the Ophthalmic Lens Laboratory, U. S. Naval Supply Center (Norfolk), Cheatham Annex, Williamsburg, Va., to permit map reading, instrument reading, and overhead radio adjustment. They will be supplied as follows:

Frame ..... aviation sunglass frame
Tint ..... N15 or white
Top segment ..... round only
Bottom segment ..... flat top or round
(Executive style not available in double segment lenses; Executive style available with reading segment only, in white or N15.)

Funds were set aside for this fiscal year to provide aviation type eyeglasses with single or double segment bifocals or simple distance correction

in accordance with indicated need for aviation personnel. Up to now the fund has not been fully used. This may be because aviation personnel have not been offered the opportunity to secure the lenses or because all requirements are satisfied. If the former situation pertains, steps should be taken to utilize the appropriation. If the latter situation is true, no action is necessary. Unnecessary expenditure of funds is not warranted. On the other hand, an appropriation cut for next year is not desired because of an apparent rather than real excess for this year. It is recommended that all flight surgeons take appropriate action.

The Ophthalmic Lens Laboratory will fabricate spectacles of the "double-seg" type for the aviation prescriptions of N15 or "white." However, the vertical displacement between the upper and lower segments will be 15 mm and there will be a minimum of 10 mm for the upper segment. The difference in the total of these figures and the vertical measurement of the lens itself will determine the height of the lower segment. For example, if a 42 mm eyepiece is ordered, 10 mm for the upper segment and 15 mm for the middle segment must be allowed. In that event, a lower segment height more or less than 17 mm cannot be furnished. If a lower segment greater than 17 mm is considered necessary, a larger eyepiece must be ordered.

* * * * * *

Aerospace Medical Association Meeting

The 31st Annual Aerospace Medical Association Meeting, recently convening in Miami Beach, Fla., was attended by approximately 1550 members and guests. Indicative of international interest in the meeting was attendance of 104 representatives from 33 foreign countries. In addition to active duty personnel, many inactive Reserve and retired officers attended the scientific sessions to maintain their contact with aerospace progress. Retirement point credits were allowed to Reserve officers attending the sessions.

Following a concert by the 538th U.S. Air Force Band from Hunter Air Force Base, the scientific program was opened by an address of welcome by the President of the Association, Dr. Ludwig G. Lederer. During the three days of the session, 128 papers were presented at the scientific sessions, several panel discussions were held, and many technical and scientific exhibits were available for viewing. Seven of the exhibits were prepared by the U.S. Navy. A feature of the scientific sessions was the Louis H. Bauer Lecture given by Dr. Detlev W. Bronk.

The climax of the meeting was the "Honors Night Dinner," preceded by a reception sponsored by Burroughs, Wellcome and Company and Capitol Airlines. The dinner was attended by the largest number of members and guests in the history of the Association. Awards presented were: The Lyster Award to Air Commodore A.A.G. Corbet RCAF; The Longacre Award to Dr. Brant Clark; The Tuttle Award to Dr. Hermann J. Schaefer; and

The Liljencrantz Award to Dr. James D. Hardy. During the evening, the announcement was made of the election of RADM James L. Holland MC USN as President Elect to fill the vacancy resulting from the resignation of CAPT Oran W. Chenault, and BGEN Don Flickinger USAF MC as First Vice President. At the conclusion of the evening, Dr. Lederer, the retiring President, received the Past President pin and turned the administration of the Association over to Dr. George J. Kidera, the new President.

Fellows elected to the Association during this year's meeting were: CDR Frank H. Austin Jr. MC USN; MAJ Charles A. Berry USAF MC; CAPT Roland A. Bosee MSC USN; Joseph G. Constantino MD; James D. Hardy Ph D; LTCOL James P. Henry USAF MC; Alfred M. Mayo BS ME; James N. Waggoner MD; and CAPT Edward M. Wurzel MC USN.

Social events connected with the meeting and the program of the Wives' Wing were outstandingly successful. The Wives' Wing registered 168 members and guests. Many activities were planned for their entertainment in addition to the advantages of sunbathing, the pool, and the ocean beach.

The 32nd annual meeting will be held at the Palmer House, Chicago, Ill., 24 - 27 April 1961. Navy Flight Surgeons and Medical Service Corps allied scientists, Regular and Reserve, are encouraged to make plans to attend.

* * * * * *

Project Mercury

Project Merdury is the official United States project designed to result in manned orbital flight. Descriptions of the nature of the project have become well known to the American public through numerous articles in the press. Not so well known, however, is the extent and nature of Navy Medical Department participation in Project Mercury.

This participation has included support in selection of the Mercury astronauts, selection of the full pressure suit developed by the Air Crew Equipment Laboratory as the suit which the astronauts will wear in flight, an extensive program of training of the astronauts on the dynamic flight simulator of the Aviation Medical Acceleration Laboratory centrifuge, additional training of the astronauts at ACEL in a specially modified low pressure chamber which permits environmental studies on the astronauts occupying a full-scale Mercury capsule within the chamber, training of the astronauts in various aspects of survival, and many other tasks which have been carried out by several of the research and development laboratories of the Navy Medical Department.

Project Mercury, being conducted by the National Aeronautics and Space Administration, is a combined effort involving NASA, Department of Defense, and industry.

CAPT Clifford P. Pheobus MC USN, Director of the Astronautical Division of the Bureau of Medicine and Surgery, has been designated as the Naval Medical Assistant for all of the bioastronautics aspects of Department of Defense support for Project Mercury. There are similarly designated representatives of the Army and Air Force.

Military medical officers will man the world-wide tracking and monitoring stations which will exercise surveillance over the Mercury astronauts in their orbital flights. Army, Navy, and Air Force medical officers have been carefully selected for assignment to these stations and will begin training for their vital medical surveillance roles in May 1960. Six Navy Medical officers selected for this assignment are: CAPT Carl E. Pruett and LT Glenn F. Kelly, Pacific Missile Range, U.S. Naval Missile Center, Point Mugu, Calif.; CAPT Edward L. Beckman and LCDR John J. Gordon, Aviation Medical Acceleration Laboratory, Naval Air Development Center, Johnsville, Pa.; CAPT Walton L. Jones, Bureau of Medicine and Surgery; and LCDR Frank H. Austin Jr, Carrier Air Group FOUR, U.S. Naval Air Station, Cecil Field, Fla.

While attention and publicity has been focused on the preparations for the Mercury flights, the Navy has primary responsibility for all aspects of the recovery phase of Project Mercury—this on a world-wide basis. CAPT Ashton Graybiel MC USN, Director of Research at the Naval School of Aviation Medicine, Pensacola, Fla., has been designated director of the medical aspects of the recovery operation. As such, he is charged with preparation of the necessary medical support and debriefing plans and the organization and direction of the activities of the Medical Support and Debriefing Team for both animal and man flights. His major task will be to insure the adequacy of medical support to the astronauts after they have completed their flight and have been located and recovered by Navy units dispersed for that purpose. In order to gain maximum benefits from this national man-space project, it will be necessary for CAPT Graybiel to prepare a debriefing plan which insures that every possible item of useful information may be obtained.

* * * * * *

FAA Medical Certification

Issue of FAA Second Class Airman's Medical Certificates is authorized in certain instances for Navy, Marine Corps, and Coast Guard personnel under the provisions of BuMed Instruction 6120.11B. There has been some misinterpretation of the intent of this instruction insofar as eligibility for examination is concerned. The intent of this instruction is to include all pilots who are in a solo flight status and enlisted men who are required by the United States Navy to hold an FAA Second Class Airman's Medical Certificate because of the duties of their rate (such as Air Controlman). Included are personnel in the

above categories of the Regular Navy and Naval Reserve on active duty. Qualified personnel of the Organized Reserve, personnel on brief periods of active duty (such as two-week training cruises) and those in the "Week-end Warrior" program are included. Inactive Reserve and retired personnel are not eligible.

As a matter of information, the First Class certificate is required for airline pilots. The Second Class certificate is required for commercial pilots; such as company pilots, pilots flying individuals or groups for hire, pilot instructors for private flying concerns or pilots engaged in private enterprise. BuMed Instruction 6120. 11B is concerned only with certificates for commercial class pilots. A Second Class certificate should not be issued when a Third Class certificate will suffice. The Third Class certificate is required for student pilots and for private pilots flying not for hire. Naval Medical officers are authorized to issue this certificate.

* * * * * *

Professional Opportunities for Scientists in the Medical Service Corps

Readers of the News Letter are often asked about career opportunities that exist for young scientists in the Navy. The Allied Sciences Section of the Medical Service Corps represents a small but very important research and training group supporting the mission of the Medical Department.

While it is readily admitted that a scientific career in the Medical Service Corps does not lead the young scientist down the road to easy wealth, nevertheless, there are many subtle satisfactions to be gained from such a Navy career which are not always found in civilian or academic pursuits. For example, special types of research equipment are often available in Navy laboratories but not on the college campus or in industry. Opportunities exist for continuing to advance one's education at full pay and allowances in one's professional specialty. Other than Social Security, no deductions are made from the individual's income to participate in a program for retirement. Promotional opportunities are simple and straightforward, not dependent upon the award of a particular research contract to one's employer. Hospitalization insurance is not necessary.

At present, there are nineteen scientific specialties in the Allied Sciences Section (See BuPers Manual C-1322). The career opportunities for two specialties, Physiology and Experimental Psychology, are described below. Clinical Psychology will be described in a later issue.

In general, the minimum qualification for a commission as Ensign is completion of 30 semester hours of postgraduate work towards a Master's Degree from an accredited college or university. (Pharmacy and Optometry are exceptions.) The applicant must be at least 21 and under 32 years of age

at the time of appointment. Applicants with a D. Sc. or Ph. D. degree are eligible for appointment as Lieutenant Junior Grade with an automatic credit of 18 months precedence in rank.

Informal queries by interested students regarding specific opportunities in their specialty are always welcome. Letters should be addressed directly to: Director, Medical Service Corps Division, Bureau of Medicine and Surgery (35B), Department of the Navy, Washington 25, D. C.

Physiology

Physiologists on duty in the Medical Department are utilized principally in research and development in the broad areas of environmental physiology referable to naval problems; training of aviation personnel in the physiologic aspects of the high altitude environment encountered in the use of high performance naval aircraft; and a combination of research and training.

Research and Development. Physiologists conduct research, development, test and evaluation studies concerned with acceleration/deceleration stress; artificial atmospheres for enclosed spaces; omni-space and utility protective clothing; environmental problems referable to improved performance under extreme climatic conditions; physiologic visual (optics) problems; physiologic problems related to exposure to electromagnetic and ionizing radiations; and miscellaneous medical and dental problems of a physiologic nature.

Training. Physiologists engaged in training are based at major naval aviation activities. The instruction provided includes indoctrination of aviation personnel in the physiologic aspects of the high-altitude environment; use of oxygen equipment using an altitude chamber; aircraft ejection seat procedure; night vision techniques; and the fitting, operation, and physiologic principles involved in the use of high-altitude (space) aviators' protective suits and related equipment. Training assignments may require—in addition to instructional duties—preparation of training aids, technical manuals, and other professional publications.

Combination of Research and Training. Physiologists in training assignments who meet or acquire the educational requirements and demonstrate a capacity for research may move into the research program or develop a balanced career pattern of research and training. There are assignments which combine varying degrees of research, development, test and evaluation with training. The opportunities are sufficiently varied to permit a career pattern satisfying the particular interests and aptitudes of the individual.

Special Hazardous Duty Pay. Those officers ordered to physiologic training duties requiring their exposure to simulated altitudes in low pressure chambers or to acceleration/deceleration or thermal stress may be paid an additional $110 per month in accordance with existing regulations.

Experimental Psychology

Do you know of a young man interested in learning theory; training processes; statistical theory and research methodology; human factors and equipment design; criteria development and evaluation; human quality control; morale and motivation; or recruiting and selection? If so, he will be interested in the Experimental Psychology Program.

Research. Research is the primary mission of the Navy Experimental Psychologist. Some psychology officers are involved in quite basic research problems, whereas others are working much of the time with rather specifically applied problems. The policy is to let each man work within his own sphere of interest insofar as practicable. Fortunately, tastes vary and, generally, there are some officers who prefer to do the strictly applied kinds of jobs that may demand attention, leaving others free for more basic problems. As a rule, all are given an opportunity to follow their own research interests even though they may spend a part of each day on some assigned work.

Most of the work done eventually sees the light of day in published reports, research papers read before professional societies, or through publication in professional journals. The facilities available for the conduct of research are generally excellent. Apparatus often unavailable elsewhere, good availability of subjects, and excellent support and publication facilities offer young scientists a rare opportunity to try themselves out and discover their areas of greatest professional effectiveness.

The New Frontier - Space. The Experimental Psychology Program was born in aviation, but has been expanding to deal with problems in submarines, missiles, and space. In November 1959, the Life Sciences Division at the U.S. Naval Missile Center, Point Mugu, Calif., was established to promote basic and applied scientific research in the field of Bioastronautics. Medical Service Corps psychologists are also involved with selection and training research required by the National Aeronautics and Space Administration (NASA). Further, the well established laboratories located at Pensacola, Fla., Philadelphia, Pa.; and Bethesda, Md., have embarked on research projects in this vital area of the future.

Travel Limited. Members of the Experimental Psychology group are seldom assigned to duty outside the continental limits of the United States. The research tasks for this group usually require the types of laboratory facilities and electronic computers which are only available at stateside installations. Therefore, it is seldom necessary to leave the United States except for those rare special projects which require data from a particular environment which cannot be duplicated locally.

Special Hazardous Duty Pay. Those officers ordered to research projects involving flying or other hazardous duty may be paid an additional $110 per month in accordance with existing regulations.

RESERVE SECTION

Promotion Plan for Inactive Duty Naval Reserve Officers

During the period of January to June each year, thoughts of many U. S. Naval Reserve officers will be directed to the Bureau of Naval Personnel and the ultimate results of the various Reserve selection boards that will be in session.

Selection for promotion to the next higher grade is a very competitive process whereby all eligible personnel are competing and being evaluated on the basis of their past demonstrated performance as reported by their reporting seniors, and are further evaluated as to their relative qualifications to serve in the next higher grade upon mobilization of the Naval Reserve. The process of evaluation and classification is performed by a group of experienced senior officers who are ordered to serve as members of the selection board by the Secretary of the Navy. The deliberations of the selection board are in strict confidence, and only the final report listing the recommended selectees is published.

In order to explain the selection process more completely, it is desirable to discuss the promotion cycle as it pertains to the active-inactive Reserve officer. The promotion cycle may be divided into four major categories; namely, eligibility, selection, qualification and appointment. The functions performed in each category are as follows:

I. Eligibility

The promotion zones are established after a very comprehensive projected study of the grade structure in the U. S. Naval Service has been completed. The purpose of the study is to assure equitable promotion opportunities among succeeding groups of Reserve officers within the authorized grade limitations as established by law. The number of vacancies which are determined by the SecNav to be available for selection is predicated on a percentum of the total number of officers being considered for the first time (New Field). Thus, officers who have been considered one or more times (Old Field) vie with those being considered for the first time for these vacancies.

Official announcement of the promotion zones and the convening dates of the selection boards is made by yearly Bureau of Naval Personnel notices and also by publications, such as "Naval Reserve Association News," "The

Naval Reservist," "All Hands," and "Navy Times." If an officer's date of rank and lineal number place him within the promotion zone, he must meet other requirements to establish his eligibility for consideration by the appropriate selection board. The additional requirements are that he must be in an active status and that he be credited with at least 12 retirement points in the anniversary year ending in the preceding fiscal year. Each time an officer's name is withheld from consideration for promotion because of not meeting these requirements, he has failed of selection once. In determining those officers who have participated to the extent that they are credited with the minimum retirement points, the Bureau of Naval Personnel is assisted by the Reserve Officer Recording Activity which is located at Omaha, Neb. Eligibility for consideration is established and determined as of the end of the fiscal year preceding the year in which considered for promotion. The records of those officers who have met the requirements as outlined above will be submitted to the proper selection board for consideration.

2. Selection

The selection process is performed by a group of officers who are ordered to the Bureau of Naval Personnel specifically for duty as members of a selection board, and who are directed by the Secretary of the Navy to perform their duties in accordance with the Secretary of the Navy regulations for promotion of Naval Reserve officers pursuant to "Title 10, U.S. Code," which is quoted as follows:

> "From among those officers who are eligible for consideration for promotion, each selection board shall recommend for promotion those officers who it considers best fitted, or qualified for promotion as required by Section 5896, Title 10, U.S. Code."

As specified by "Title 10, U.S. Code," at least 50 per centum of the selection board members shall, to the extent practicable, be Reserve officers, and all members shall be senior in permanent grade and temporary rank to any officer being considered by that board. No officer shall serve on two consecutive selection boards when the second of such boards considers any of the officers who were considered, but not recommended, for promotion to the same grade by the first selection board upon which he served. Title 10 further requires that all boards will be composed of at least five members, each of whom swear or affirm that he will, without prejudice or partialtiy, and having in view both the special fitness of officers and the efficiency of this Armed Force (Navy, as this case is), perform the duties imposed on him as a member of such board. In arriving at a decision relative to each individual eligible officer's promotional potential, the selection board considers the information contained in the fitness report jacket, the selection board jacket, any record of legal proceedings in cases where eligible officers are concerned, and health records of individual eligible officers as requested by the selection board. Since the proceedings of the

various selection boards are conducted in strict confidence, no information is available as to why certain officers are recommended for promotion and others fail to be recommended. In general, failure of selection may be attributed to the fact that, within the numerical limitations as established by the Secretary of the Navy, an officer's record did not compare favorably enough with those of his contemporaries to permit his selection. Missing records do not automatically disqualify candidates from consideration; for if an officer has established his eligibility, his record will be submitted to the appropriate selection board for consideration regardless of its condition. The selection board is required to certify in its record of proceedings that it has carefully considered the case of every officer whose name was furnished the board by the Chief of Naval Personnel for the Secretary of the Navy.

"Title 10, U.S. Code" requires that not less than a majority of the total membership of any selection board must concur in each recommendation made by the board.

A selection board is charged with further responsibility; namely, during its deliberations and after it has completed its selections, it constitutes itself as an examining board to pass upon the professional qualifications of all recommended candidates subject to their meeting further requirements as directed by the Secretary of the Navy.

A selection board report may not be published until is has been routed to cognizant offices in the Bureau of Naval Personnel, the Judge Advocate General, the Secretary of the Navy, the Secretary of Defense, and finally, to the President of the United States for his signature of approval.

3. Qualification

After the report of the selection board has been approved by the President of the United States, individual letters of notification are prepared and mailed to each selectee. The letters of notification explain the requirements for qualification; that is, professional and physical, and are sent via the Reserve Officer Recording Activity, who, by endorsement advise the selectee of his current promotion point status and the Commandant or command that holds his record, who endorses the letter to the officer selected. Prior to 1 July 1957, the letter of notification stated that the selectee had one complete fiscal year following the year in which selected to qualify professionally and physically. On 2 July 1957, the Secretary of the Navy approved revised regulations for promotion of Naval Reserve officers pursuant to the "Reserve Officer Personnel Act of 1954." The revised regulations provide for two fiscal years in which to qualify professionally and physically. To establish professional fitness for promotion, a number of promotion points must be earned in grade computed as follows:

a. For promotion to lieutenant (junior grade), 12 promotion points for each six months in the grade of ensign computed from date of rank, to date of rank to be assigned as lieutenant (junior grade).

b. For promotion to lieutenant, lieutenant commander, or commander, 24 promotion points for each year in grade computed from the 1st day of July following date of rank (or from date of rank if it be a 1 July) to 30 June of the fiscal year in which selected for promotion; not to exceed a total of 144 promotion points.

c. For promotion to captain, officers will be given the option of qualifying by earning either an average of 24 points for each year in grade of commander, up to a maximum of 144 points, or by completing, in the grade of commander, one of the six courses of study as outlined in BuPers Instruction 1416.4B.

(To be concluded in the next issue)

* * * * * *

DEPARTMENT OF THE NAVY
U. S. NAVAL MEDICAL SCHOOL
NATIONAL NAVAL MEDICAL CENTER
BETHESDA 14, MARYLAND
OFFICIAL BUSINESS
Permit No. 1048

POSTAGE AND FEES PAID
NAVY DEPARTMENT